

Appl. No. 10/720,882
Amdt. Dated January 1, 2005
Reply to Office Action of October 18, 2004

REMARKS

Rejection under 35 U.S.C. 112:

By the present Office Action, claims 12 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner points out that the use of the phrase "thin enough" to describe the thickness of the interlayer renders the claims indefinite because it is not clear what is and is not "thin enough." Applicant respectfully disagrees, as explained below.

Claims 12 and 19 describe:

"...a water soluble interlayer interposed between the substrate and the thermosensitive layer; wherein the substrate comprises rough and/or porous surface capable of mechanical interlocking with a coating deposited thereon, and the interlayer is substantially conformally coated on the microscopic surfaces of the substrate and is thin enough in thickness, to allow bonding between the thermosensitive layer and the substrate through mechanical interlocking."

As described in page 10, line 3 of the instant application, such a plate configuration is defined in the incorporated U.S. Pat. No. 6,014,929. As described in the specification (such as col. 6, paragraphs 3-4; col. 7, paragraph 5; and col. 8, paragraphs 2-3) and Figure 1 of U.S. Pat. No. 6,014,929, the term "thin enough" is well defined. The term "thin enough" is further defined by the term "to allow bonding between the thermosensitive layer and the substrate through mechanical interlocking." In order to achieve mechanical interlocking between the thermosensitive (or radiation-sensitive) layer and the substrate in a configuration as illustrated in Figure 1 of U.S. Pat. No. 6,014,929, the interlayer has to be below a certain thickness (thin enough). If the interlayer is above such a thickness (not thin enough), there is no mechanical interlocking between the thermosensitive layer and the substrate. Only when the interlayer is below a certain thickness (thin enough), there is mechanical interlocking between the thermosensitive layer and the substrate. Figure 1 of U.S. Pat. No. 6,014,929 is copied below for the convenience of the Examiner.

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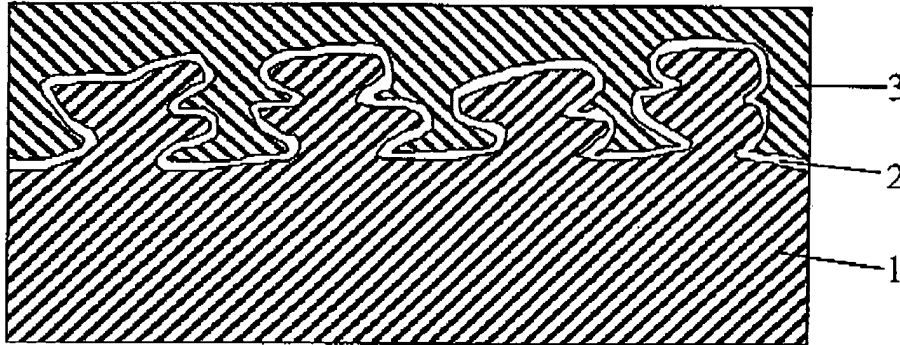


Figure 1 of U.S. Pat. No. 6,014,929 (incorporated by reference in the instant application, as described in page 10, line 3).

In view of the above remarks, it is respectfully submitted that the incorporated reference (U.S. Pat. No. 6,014,929) has clearly defined the meaning of "thin enough," and the claim rejection of claims 12 and 19 based on 35 U.S.C. 112 has been satisfied and should be withdrawn.

Rejection under 35 U.S.C. 102

By the present Office Action, claims 1-24 are rejected under 35 U.S.C. 102 as being anticipated by Gries (US2003/0215744 A1). The Examiner points out that the polymerizable compounds meet the present limitations for the urethane and non-urethane (meth)acrylate monomer. The Examiner further cites Examples 1-3 wherein a methylmethacrylate/methacrylic acid copolymer is used with a reaction product of a diisocyanate and a methacrylate. Applicant respectfully disagrees, as explained below.

In the present application, the thermosensitive layer comprises
"a polymeric binder, a urethane (meth)acrylate monomer having at least 6 (meth)acrylate groups, a non-urethane (meth)acrylate monomer having at least 4 (meth)acrylate groups, a free-radical initiator, and an infrared absorbing dye; wherein the weight ratio of said urethane (meth)acrylate monomer to said non-urethane (meth)acrylate monomer is from 0.10 to 3.0" (as described in all the independent claims: claims 1, 18, 21, and 24).

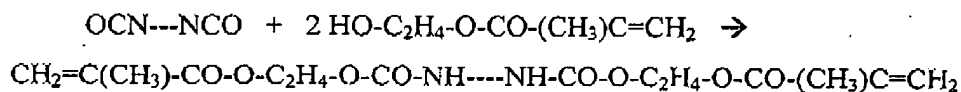
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Gries does not teach such a specific composition which has a urethane (meth)acrylate monomer having at least 6 (meth)acrylate groups and a non-urethane (meth)acrylate monomer having at least 4 (meth)acrylate groups, with a urethane monomer to non-urethane monomer weight ratio of from 0.10 to 3.0.

In Examples 1, 2, 4-8 of Gries, the reaction product of 1 mole of 2,2,4-trimethylhexamethylene diisocyanate and 2 mole of hydroxyethylmethacrylate is a urethane methacrylate with two (2) functional groups. The following is the typical reaction:



The functionality of two (2) of this urethane acrylate is less than the required functionality of at least six (6) in the instant invention.

In Example 3 of Gries, the reaction product of 1 mole of 2,2,4-trimethylhexamethylene diisocyanate, 1 mole of hydroxyethylmethacrylate, and 0.5 mole of 2-(2-hydroxyethyl)piperidine is expected to yield a urethane methacrylate with a functionality of less than two (2). Such functionality is less than the required functionality of at least six (6) in the instant invention.

Example 2 also describes the use of non-urethane monomer. However, in each example as listed in Table 1 of Example 2, only one monomer was used. In contrast, the instant invention uses a combination of urethane monomer and non-urethane monomer at a weight ratio of from 0.10 to 3.0.

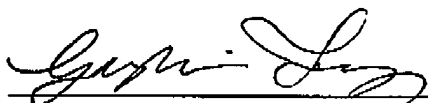
In view of the above remarks, it is respectfully submitted that Gries does not teach the specific composition of the instant invention which has a urethane (meth)acrylate monomer having at least 6 (meth)acrylate groups and a non-urethane (meth)acrylate monomer having at least 4 (meth)acrylate groups, with a urethane monomer to non-urethane monomer weight ratio of from 0.10 to 3.0, and the claim rejection of claims 1-24 based on 35 U.S.C. 102 has been satisfied and should be withdrawn.

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Conclusion

Applicant respectfully requests that a timely Notice of Allowance for all claims (claims 1-24) be issued in this case.

Respectfully submitted,




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Certificate of Mailing

I hereby certify that this correspondence is sent to the U.S. Patent and Trademark Office by facsimile at 703-872-9306 on January 1, 2005.

Signed 
Gary Ganghui Teng
Inventor and applicant